

AWARENESS, PERCEPTION AND ACCEPTANCE OF NUTRACEUTICALS
AMONG YOUNG ADULTS AT PANJAB UNIVERSITY, CHANDIGARH

Jasdeep Singh	MPH Scholar, Centre for Public Health, Panjab University, Chandigarh
Naveen K. Goel	Professor & Ex -Head, Department of Community Medicine, Government Medical College and Hospital, Chandigarh
Manoj Kumar	Chairperson, Centre for Public Health, Panjab University, Chandigarh
Tanya Goel	PGJR Department of Community Medicine Government Medical College and Hospital

ABSTRACT **Background:** Nutraceuticals are increasingly used as part of health promotion and preventive health practices, but consumer knowledge regarding their benefits, safety and appropriate use remains variable. The present study assessed awareness, perceptions, use and acceptance of nutraceuticals among young adults associated with Panjab University, Chandigarh. **Methods:** A descriptive cross-sectional study was conducted among 230 participants using a structured, self-administered questionnaire. Information was collected on socio-demographic characteristics, awareness, perceptions, current use, sources of information and future acceptance of nutraceuticals. Descriptive statistics were used and associations with selected socio-demographic variables were examined using chi-square tests, with $p < 0.05$ considered statistically significant. **Results:** The mean age of participants was 23.07 ± 2.42 years; 53.0% were female. Graduates constituted 65.2% of the sample size and 68.7% were urban residents. Overall, 63.0% reported current nutraceutical use. Social media was the most frequently reported source of information (46.1%), followed by other sources (33.9%) and healthcare professionals (30.0%). Seventy-four percent recognized nutraceuticals as food-derived products providing benefits beyond basic nutrition, and 71% believed that nutraceuticals could help prevent disease. Current use was significantly associated with age group ($p = 0.042$) and educational status ($p = 0.002$), while no significant association was observed with gender, occupation or residence. **Conclusion:** The study demonstrated substantial awareness and use of nutraceuticals, together with positive perceptions regarding their potential health benefits. At the same time, uncertainty about scientific testing, product quality and marketing indicates the need for evidence-based health education and professional guidance.

KEYWORDS : Nutraceuticals; Awareness; Perception; Acceptance; Dietary Supplements; University Students; Young Adults

INTRODUCTION

Nutraceuticals have gained increasing attention with the growing emphasis on disease prevention, healthy lifestyles and health promotion. The term nutraceutical was coined to describe food or food-derived products that provide health benefits beyond basic nutrition. Nutraceuticals include dietary supplements, vitamins, minerals, probiotics, herbal products, functional foods and other bioactive food components.^{1,2,3}

The expanding burden of non-communicable diseases, increasing health consciousness and widespread access to health information have contributed to growing consumer interest in nutraceutical products. The COVID-19 pandemic further increased interest in immunity-related supplements and preventive health products.¹ In India, nutraceutical use has also been supported by the long-standing cultural use of food-based and herbal preparations, alongside increasing exposure to commercial health products.³

Although nutraceuticals are widely available, awareness of their evidence base, safety, dosage, possible adverse effects and appropriate indications may remain incomplete. Previous studies have identified perceived health benefits, product knowledge, affordability, marketing, social influence, trust and educational status as important influences on consumer behavior.^{4,5,6}

Young adults and University populations are particularly relevant for studying nutraceutical behaviour because of their frequent exposure to digital health information, social media, changing dietary practices and self-directed health decisions. Studies among students have reported reasonable awareness of supplements but continuing gaps regarding appropriate use and adverse effects.^{5,7,8,9,10} However, evidence from University populations in Northern India remains limited. Therefore, the present study was undertaken to assess awareness, perception, patterns of use and acceptance of nutraceuticals among University students at Panjab University, Chandigarh (U.T.) India

METHODS

A descriptive cross-sectional study was conducted at Panjab University, Chandigarh. The study population comprised eligible young adult participants from the University setting. A sample size of 220 was initially planned using an expected prevalence of 50%, 10% absolute precision and allowance for non-response; the final analysis included 230 participants. The Study methodology describes

recruitment using random sampling across departments and administrative units.

Participants who gave informed consent and completed the questionnaire were included. Incomplete questionnaires were excluded. Data was collected using a structured self-administered questionnaire covering socio-demographic characteristics, awareness and knowledge of nutraceuticals, use patterns, perceptions and attitudes, sources of information, and factors influencing future acceptance. The questionnaire was designed to take approximately 10–15 minutes to complete.

Data was summarized using frequencies, percentages, means and standard deviations. Chi-square test was used to examine associations between selected socio-demographic variables and nutraceutical use/information sources. A p -value < 0.05 was considered statistically significant. Participation was voluntary, informed consent was obtained, and confidentiality was ensured.

RESULTS

A total of 230 participants were included. The mean age was 23.07 ± 2.42 years. Females constituted 53.0% and males 47.0%. Most participants were graduates (65.2%), followed by school-level participants (20.0%) and postgraduates (14.8%). Most participants were students (91.7%), and 68.7% belonged to urban areas.

Table 1. Socio-demographic Characteristics of Study Participants (N=230)

Characteristic	Category	n (%)
Age	18–20 years	37 (16.1%)
	21–23 years	81 (35.2%)
	24–26 years	94 (40.9%)
	27–30 years	18 (7.8%)
Gender	Female	122 (53.0%)
	Male	108 (47.0%)
Education	Graduate	150 (65.2%)
	School level	46 (20.0%)
	Postgraduate	34 (14.8%)
Occupation	Student	211 (91.7%)
	Student but doing Part-time job	19 (8.3%)
Residence	Urban	158 (68.7%)
	Rural	72 (31.3%)

Awareness and knowledge regarding nutraceuticals were generally favourable. Eighty percent of participants had heard about nutraceuticals. Social media was the leading source of information (106, 46.1%), followed by other sources (78, 33.9%), doctors/health professionals (69, 30.0%), advertisements (54, 23.5%) and friends (54, 23.5%). Seventy-four percent believed that nutraceuticals were derived from food sources beyond basic nutrition. Vitamins and minerals were the most commonly identified type (153 participants), followed by omega fatty acids (127), herbal supplements (114), functional foods (103) and probiotics (82).

Table 2. Distribution of Participant's According to Awareness and Safety Perceptions Regarding Nutraceuticals (N=230)

Awareness/perception item	Yes Response n (%)	No Response n (%)
Heard about nutraceuticals	184 (80.0%)	46(20.0%)
Derived from food sources beyond basic nutrition	170 (73.9%)	60(26.1%)
Nutraceuticals can prevent disease	163 (70.9%)	67(29.1%)
Scientifically tested	96 (41.7%)	134(58.3%)
Scientifically tested	104 (45.2%)	126(54.8%)
Misuse can cause side effects	143 (62.2%)	87(37.8%)
Would stop use if side effects occur	183 (79.6%)	47(20.4%)

Current nutraceutical use was reported by 145 participants (63.0%), while 85 (37.0%) reported no current use. Occasional use was most common (88, 38%), followed by weekly use (40, 17%) and daily use (17, 8%). Multivitamins were the most frequently identified product (98 participants), followed by fortified foods (50), protein powders (42), herbal/Ayurvedic supplements (24) and probiotics (23). The leading reported reason for use was improving immunity (108), followed by disease prevention (37) and doctor's advice (29).

Table 3. Pattern and Reasons for Nutraceutical Use (N=230)

Use characteristic	Category	n (%)
Current use	Yes	145 (63.0%)
	No	85 (37.0%)
Frequency	Daily	17 (7.4%)
	Weekly	40 (17.4%)
	Occasionally	88 (38.3%)
	No use	85 (37.0%)
Main reason	Improve immunity	108
	Disease prevention	37
	Doctor's advice	29
	No reason	84

Perceptions showed a mixture of positive attitudes and uncertainty. Seventy-seven participants agreed that nutraceuticals were safer than pharmaceutical drugs, while 79 agreed that they were effective in improving overall health. Eighty-three agreed that doctors should recommend nutraceuticals along with medicines. Sixty-nine considered nutraceuticals expensive for regular use. Only 44 participants agreed that they trusted the quality of nutraceuticals available in the Indian market, while 68 participants disagreed or strongly disagreed with this statement.

Table 4. Perceptions Regarding Nutraceuticals (N=230)

Perception statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Total
Safer than pharmaceutical drugs	6	15	90	77	42	230
Effective for overall health	4	11	84	79	52	230
Doctors should recommend with medicines	3	20	76	83	48	230
Too expensive for regular use	7	39	80	69	35	230
Trust quality in Indian market	14	54	106	44	12	230
Should be regulated as strictly as medicines	10	31	96	56	37	230

Regarding future acceptance, 118 (51%) participants were likely and 34 (15%) very likely to use nutraceuticals in the future and 8 (4%) were

unlikely. Overall, 124 (54%) stated that they would recommend nutraceuticals to others, while 89 (39%) were unsure. Among non-users, preference for a natural diet was the most frequently reported reason (152 responses), followed by lack of awareness (40), lack of trust in effectiveness (32), high cost (31).

Current nutraceutical use was significantly associated with age group $p=0.042$ and educational status $p=0.002$. Use was highest among participants aged 24–26 years (70.2%) and lowest among those aged 18–20 years (45.9%). Graduates reported the highest use (70.7%), compared with 55.9% among postgraduates and 43.5% among school-level participants. Gender, occupation and residence were not significantly associated with current use.

Table 5. Association Between Socio-Demographic Characteristics and Current Nutraceutical Use (N=230)

Variable	Category	Current use n (%)	p-value	X ²
Age	18–20 years	17 (45.9%)	0.042*	8.229
	21–23 years	53 (65.4%)		
	24–26 years	66 (70.2%)		
	27–30 years	9 (50.0%)		
Gender	Female	72 (59.0%)	0.227	1.459
	Male	73 (67.6%)		
Education	Graduate	106 (70.7%)	0.002*	12.048
	Postgraduate	19 (55.9%)		
	School level	20 (43.5%)		
Occupation	Student	133 (63.0%)	1.000	0.000
	Part-time job	12 (63.2%)		
Residence	Urban	104 (65.8%)	0.252	1.314
	Rural	41 (56.9%)		

Note: Chi-square test applied. * $p<0.05$ significant. Current user = any frequency of use (Occasionally/Daily/Weekly). Non-Users=No/ Never.

DISCUSSION

The present study found that nutraceutical awareness and use were common among participants in the University setting. Eighty percent had heard about nutraceuticals and 63% reported current use. The level of awareness was comparable to the 77% awareness reported in a study from Hyderabad.² The relatively high awareness in the present population may reflect the educational environment and widespread access to digital health information now a days.

Social media was the leading source of information, accounting for 46.1% of responses, followed by healthcare professionals, advertisements and friends. The dissertation literature similarly identifies digital media, advertising, social influence and product information as important influences on nutraceutical behaviour.¹ The finding has public health relevance because digital information may increase awareness while also exposing young adults to commercial claims of variable evidentiary quality.

Most participants recognized food-derived products, vitamins and minerals and other common nutraceutical categories. At the same time, uncertainty was evident regarding scientific testing: 45% were unsure whether nutraceuticals were scientifically tested, while only 42% believed that they were. This coexistence of high awareness with uncertainty regarding scientific validation suggests that familiarity with products does not necessarily imply adequate evidence-based knowledge.

Current use was significantly associated with age and educational status. Participants aged 24–26 years and graduates reported higher use. These associations should be interpreted as observed relationships in a cross-sectional study and not as causal effects. The study also reports no significant association between its use with gender/ occupation or residence.

Perceptions reflected both acceptance and caution. A substantial proportion of participants believed that nutraceuticals could help prevent disease but their misuse could cause side effects. Most participants also indicated that use should be stopped if adverse effects occurred. However, uncertainty regarding product quality and the belief that marketing may exert more influence than scientific evidence point to the need for reliable health communication. The majority also viewed nutraceuticals as something that may sometimes be used for

general health improvement rather than an automatic replacement for medicines.

Limitation

The findings should be considered in light of the study design. The cross-sectional nature prevents assessment of temporal or causal relationships. Information on use and perceptions was self-reported and may be affected by recall or response bias. The study was conducted in a single University setting, limiting generalizability to other populations. In addition, the questionnaire included multiple-response items, so percentages for some product types and information sources cannot sum to 100%.

CONCLUSION

Among 230 participants in the Panjab University setting, awareness and use of nutraceuticals were substantial, with 63% reporting current use. Social media was the leading source of information. Participants generally recognized potential health benefits and possible adverse effects, but uncertainty remained regarding scientific testing, product quality and the influence of marketing. Current use was significantly associated with age and educational status.

Recommendation

University-based health education, reliable digital information and appropriate involvement of healthcare professionals may help promote informed and rational nutraceutical use.

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